

ABSTRACT OF THE DISCLOSURE

The subject invention relates to a novel small molecule, referred to as alpha-(trichloromethyl)-4-Pyridineethanol (PETCM), as well as to uses thereof. PETCM
5 was identified and isolated by high throughput screening and is an activator of caspase-3. Using PETCM in combination with biochemical fractionation, a novel pathway that regulates mitochondria-initiated caspase activation was also identified. This pathway comprises tumor
10 suppressor PHAP proteins and oncoprotein prothymosin -alpha. PETCM relieves prothymosin-alpha inhibition and allows apoptosome to form at a physiological concentration of dATP.